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METHOD OF MANUFACTURING PAPER PACKAGING CONTAINER AND PAPER PACKAGING CONTAINER

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Inventor: ISHIKAWA TORU (JP)
Applicant: TETRA LAVAL HOLDINGS & FINANCE (CH)
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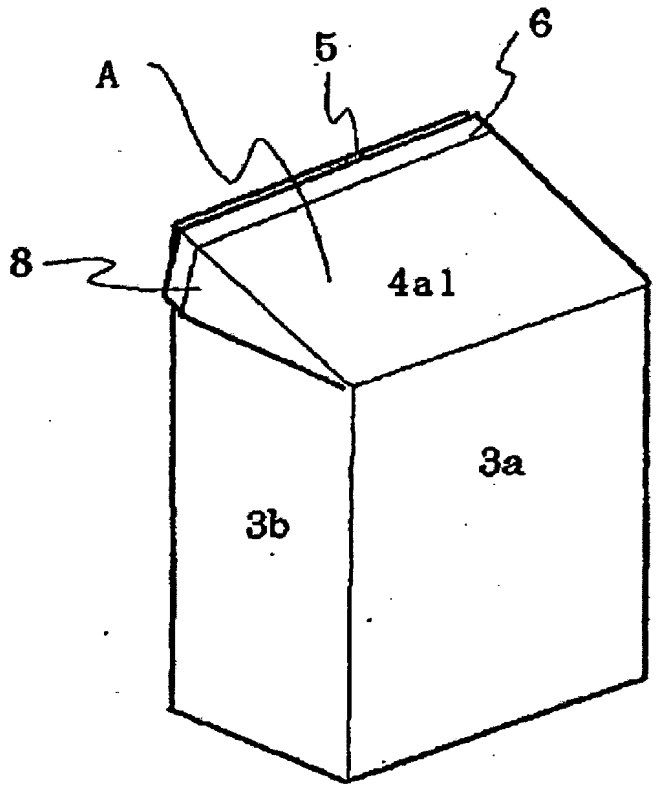
Abstract of **EP1332969**

A paper packaging container obtained by tube forming with longitudinal seal of web-shaped packaging material, filling of liquid food into the tube packaging material, transversal sealing of the tube packaging material, forming of a pillow-shaped preliminary shape container, cutting of the preliminary shape container and, forming of a final shape container having a top, side walls and a bottom by folding according to crease lines, characterized by that flaps 8 by the top forming are folded on a side wall faces 3b and, the top 4a1 is formed as shed roof shape A. Paper packaging container having an attachable tall spout with wide mouth, but small stress and no crack can be obtained at high speed.

Fig. 1



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(71) Applicant: **Tetra Laval Holdings & Finance S.A.**
1009 Pully (CH)

(72) Inventor: **ISHIKAWA, Toru,**
c/o NIHON TETRA PAK K.K.
Tokyo 102-8544 (JP)

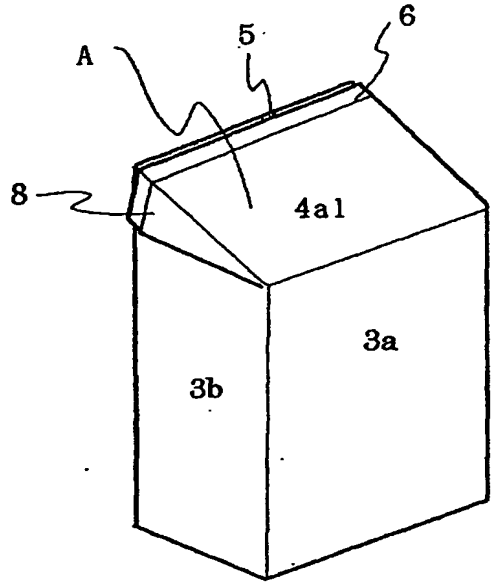
(74) Representative: **Müller, Frank Peter, Dipl.-Ing.**
Müller, Schupfner & Gauger
Patentanwälte
Maximilianstrasse 6
80539 München (DE)

(54) METHOD OF MANUFACTURING PAPER PACKAGING CONTAINER AND PAPER PACKAGING CONTAINER

(57) A paper packaging container obtained by tube forming with longitudinal seal of web-shaped packaging material, filling of liquid food into the tube packaging material, transversal sealing of the tube packaging material, forming of a pillow-shaped preliminary shape container, cutting of the preliminary shape container and, forming of a final shape container having a top, side walls and a bottom by folding according to crease lines, characterized by that flaps 8 by the top forming are folded on a side wall faces 3b and, the top 4a1 is formed as shed roof shape A.

Paper packaging container having an attachable tall spout with wide mouth, but small stress and no crack can be obtained at high speed.

Fig. 1



EP 1 332 969 A1

Description

Technical Field

[0001] This invention relates to a method of manufacturing paper packaging container and the paper packaging container.

Background Art

[0002] The flexible packaging laminated material has been used in order to pack liquid food over many years. Packaging container for use in milk, juice, refined sake, shochu, mineral water and other drink is produced by: forming the web-like packaging laminated material of, for example, a fibrous substrate (for example, paper) / plastic laminate which has crease lines, as shown in Fig. 5 as tube shape by a longitudinal seal; filling a content in the tube-shape formed packaging material; sealing the tube packaging material transversely; forming in a cushion-like or pillow-like preliminary container; cutting the containers in the fixed distance individually in case of the web-shaped packaging material and; folding a container corner flap along the crease lines to forming a brick-shaped container which consists from panels 3 for side walls, as shown in Fig. 4, longitudinal seal 5, transversal seal 6, panel 4a forming top wall and, flaps 8 (the corner flaps are formed when a top and bottom are formed) sealed by side walls. For example, a material of fibrous substrate is a cardboard.

[0003] A gable-top paper packaging container is provided by: cutting a paper packaging material in the predetermined shape; obtaining blanks sealed in container lengthwise; sealing the bottom of the blanks in filling machine; filling contents of milk, juice or other drink from an upper opening and; sealing the upper part. In these packaging material, an appearance design of the packaging container product is printed on the surface.

[0004] Crease lines of one container are repeatedly and continuously added to the web-shaped packaging material. Fig. 5 showing packaging material of one container is referred to. In the packaging material 1 per one container, the web-shaped packaging material having crease lines comprises a seal region 5 for longitudinal seal, transversal seal regions 6 to seal in a traverse direction of tube packaging material, side panels 3 to form container side wall, panels 4 a forming a top of the container, panels 4 b and 4 c which are folded to form flaps 8, and is welded in side walls or a bottom.

[0005] In boundaries of those panels, creases line 7 a- 7 c are formed.

[0006] However, in the brick-shaped container as shown in Fig. 4, transversal seal part 6 and longitudinal seal part 5 occupy in middle of the container top.

[0007] Space (blank) to apply a spout, an opening device, a lid and a plug is insufficient.

[0008] As a result, only a comparatively small spout

[0009] Furthermore, the right-sharpened four corners of the container top are one of the points where a container is most easy to receive damage by means of a physical mechanical external effect in a distribution process.

[0010] About gable top-shaped paper packaging container, the paper container having a wide on the one roof part and an applied a large-scale spout is proposed. (Japanese Patent Laid-Open No. 11-91792 and Japanese Patent Laid-Open No. 11-236027)

[0011] However, the folding part is folded more tightly by the inside, by folding of the top seal fin when the shed roof shape of one sheet roof is formed from the gable top shape more.

[0012] Stress of pressing or tension increases, thus, strength characteristic of a paper container deteriorates remarkably.

[0013] Furthermore, because it is difficult to fold a container material in consonance with crease lines, when the asymmetric gable top shape paper packaging container is formed, a preliminary top fold formation apparatus for the paper container is proposed (Japanese Utility Model Laid-Open No. 4-53602).

[0014] However, in existing high speed packaging filling machine producing, for example, 15,000 from 6000 containers an hour, and it is difficult to interpose the tool in a container interior and to fold in consonance with the crease lines, by using the proposed preliminary fold formation apparatus.

Disclosure of Invention

[0015] It is for this purpose of the invention to provide a container and a method of manufacturing the container having a wide space on a top of the paper container, and an applicably, comparatively large-scale spout and opening device.

[0016] It is for the other object of this invention to provide a container and a container manufacturing method to reduce any container damage by means of reduction of a mechanical physical external effect in a distribution process to the four corners of the container top.

[0017] More another object of this invention is to provide a container and a manufacturing method of the container having strength characteristic of paper packaging container without any tight folding part of packaging laminated material, with small tension and little pushing, at folding/forming of the container.

[0018] Further more another object of this invention is to provide a manufacturing method to form a container as high speed with folding along crease lines in existing packaging filling machine producing a container, without using any special preliminary top crease formation apparatus.

[0019] A method of manufacturing paper packaging container in accordance with this invention comprising forming a web-shaped packaging material having

tents in the tube-formed packaging material, forming the tube packaging material as a pillow -shaped preliminary shape container with transversal seal in a traverse direction, cutting an individual preliminary shape container, forming a final shape container having a top, side walls and a bottom by means of folding according to the crease lines
is characterized by that
in the top forming step, the body part of the preliminary shape container is pushed to inflate the part for top and to fold the preliminary shape container according to the crease lines,

in an axis of the slanted top ridgeline, flaps formed by the top forming is folded on the side wall faces to form the top as shed roof shape.

[0020] A paper packaging container of this invention obtained by tube forming by longitudinal seal of a web-shaped packaging material, filling of contents to be filled to the tube-shaped packaging material, transversal sealing of the tube packaging material to a traverse direction, forming of pillow-shaped preliminary shape containers, individual cut of the preliminary pillow-shaped shape container, forming of a final shape container having a top, side walls and a bottom by folding according to crease lines
is characterized by that

flaps by the top forming are folded on side wall faces and, the top is formed as shed roof shape.

[0021] In preferred embodiment of this invention, the paper packaging container has a spout on the top having shed roof shape.

Brief Description of Drawings

[0022]

Fig. 1 is an outside schematic perspective view showing one embodiment of this invention paper packaging container.
Fig. 2 is an outside schematic perspective view showing the other embodiment of this invention paper packaging container.
Fig. 3 is outline development view of one embodiment of this invention paper packaging container.
Fig. 4 is an outside schematic perspective view showing conventional paper packaging container.
Fig. 5 is outline development view of conventional paper packaging container.
Fig. 6 is an interior schematic perspective view of the packaging filling system which can be employed in a method of producing this invention paper packaging container.
Fig. 7 is the outside schematic perspective view which shows a container example attaching a large-sized screw cap in paper packaging container example of Fig. 1.
Fig. 8 is the outside schematic perspective view which shows a container example attaching a large-scale opening and shutting type cap in paper packaging container example of Fig. 1.
Fig. 9 is the outside schematic perspective view which shows a container example attaching a large-sized screw cap in paper packaging container example of Fig. 2.
Fig. 10 is outline development view of paper packaging container example of Fig. 7.
Fig. 11 is an interior schematic perspective view of a preliminary shape container to explain a folding step along crease lines of a preliminary shape container in a method of producing this invention paper packaging container.

Best Mode for Carrying out the Invention

[0023]

Fig. 1 is an outside schematic perspective view showing one embodiment of this invention paper packaging container. In embodiment shown in Fig. 1, paper packaging container comprises longitudinal seal 5 to the back side.

In the container, transversal seal 6 is folded into upper side (the back side), the flaps 8 from the top forming are folded on the side wall face of side panel 3 b by means of adhesion, shed roof shape A is formed with top panel 4a1 and the folded transversal seal 6.

With more than an angle of 90 degrees, in this embodiment, the front panel 3a standing straight and top panel 4a1 are folded in a crease line.

Fig. 2 is an outside schematic perspective view showing one embodiment other than this invention paper packaging container.

In embodiment shown in Fig. 2, paper packaging container comprises longitudinal seal 5 same as Fig. 1.

With the container, transversal seal 6 is folded into the front side, flaps 8 from the top forming are folded on a side wall face of side panel 3 b by means of adhesion, shed roof shape A is formed on top panel 4a1 and the folded transversal seal 6.

With more than an angle of 90 degrees, in this embodiment, the front panel 3a standing straight and the shed roof shape A are folded in a crease line.

Fig. 3 is outline development of one embodiment of this invention paper packaging container shown in Fig. 1 and Fig. 2 and, Fig. 3 is a plane view of the web-shaped packaging material example. As shown in Fig. 3, a packaging material 1 of one container (adjacent 2) is formed in web-shaped packaging material having a crease lineal, continually.

5 for the longitudinal seal provided to an edge of packaging material, in a longitudinal direction of packaging material, transversal seal regions 6 for transversal seal provided to the adjacent front and the adjacent back, in a traverse direction of tube packaging material, side wall panels 3 to form container wall (front 3 a, side 3 b, rear face 3 c), panels 4 a1, 4 a2 forming a top of the container and, panels 4 c and 4 b forming flaps 8 that are sealed on side walls or a bottom, respectively, by folding.

[0025] In boundaries of the panels, crease lines 7 a1,2-c1, crease line 7 a-c are formed.

[0026] In embodiment of this invention, the front panel 3 a, the side panels 3 b and the rear face panels 3 c are located on a substantially equivalence line in bottom side, height of the front panel 3a is lower than height of the rear face panel 3 c and, upward crease line 7 c 1 of side panel 3 b is the line which ties up crease line 7a1 corresponding to adjacent front panel 3 a and crease line 7 a2 corresponding to adjacent rear face panel 3 c.

[0027] While referring to Fig. 6 showing an interior schematic perspective view of the packaging filling system and Fig. 11 explaining folding step along the crease lines of preliminary shape container, the manufacture method of paper packaging container by this invention is explained concretely.

[0028] In a manufacture method of this embodiment paper packaging container; the web-shaped packaging material 12 having crease lines is sent out from web-shaped packaging material roll 11; a strip tape for longitudinal seal is attached in web-shaped packaging material edge by an applicator 13; the packaging material is sterilized in a sterilization bath 17; the web-shaped packaging material is formed as tube by a longitudinal seal apparatus 15; liquid food contents is filled from a filling pipe 14 in the tube packaging material; with transversal seal of the tube packaging material; preliminary pillow-shaped container 16 is formed; the individual preliminary shape container is cut, on carrier device 18; the container is folded in consonance with crease lines by folding apparatus (not shown) and; a final shape container 19 having a top, a side wall and a bottom is formed.

[0029] In addition, in this example shown in Fig. 6, an upside-down container bottom is transported.

[0030] In the top forming step of embodiment shown in Fig. 11, a body part of the preliminary shape container 16 is pushed as shown in an arrow and, a part for top is inflated. Thus, the preliminary shape container is folded in consonance with the crease lines easily.

[0031] The pushing timing includes the time when neither the bottom nor the top is formed as shown in Fig. 11 or, the time after folding the bottom.

[0032] In the top forming, flaps 8 comprising of three pieces of triangular panel 4 c are folded on side wall face 3 b at the axis of the slanted top ridgeline B and, the top is formed as shed roof shape.

[0033] In addition, in the bottom forming of this embodiment, the bottom panel 4 a and the bottom panel 4 b are folded on bottom face 4a at axis of a bottom ridgeline.

[0034] Examples of paper packaging container of an embodiment preferred by this invention which arranged a large-scale spout to the top are explained as referring to Figs. 7-10.

[0035] Fig. 7 shows the container example which attached a large-sized screw cap in the paper packaging container example of Fig. 1. A container of the embodiment comprises the longitudinal seal 5. The transversal seal 6 is folded into upper side (a back side).

[0036] Flaps 8 from the top forming are folded on side wall face of the side panel 3 b.

[0037] From the top panel 4a1 and the transversal seal 6, the shed roof shape A is formed. The large-sized screw cap is attached by the shed roof shape A having enough space. Fig. 8 shows a container example to attach a large-scale opening and shutting type cap to the paper packaging container example of Fig. 1.

[0038] Instead of the large-sized screw cap of Fig. 7, an opening and shutting type cap is attached to the shed roof shape A having enough space.

[0039] Fig. 9 shows a container example having a large-sized screw cap on the paper packaging container example of Fig. 2. The container of the embodiment comprises longitudinal seal 5. Transversal seal 6 is folded into bottom (the front side).

[0040] Flap 8 from top forming is folded on side wall face of side panel 3 b. With the top panel 4a1, 4a2 and the transversal seal 6, shed roof shape A is formed.

[0041] The large-sized screw cap is attached by shed roof shape A with wide space.

[0042] Front view of packaging material used to the spout embodiment is shown to Fig. 10. In the embodiment, opening structure for spouts, a perforation or, prescoring lines are formed by the top panel 4a1 of shed roof shape A.

[0043] The structure and the lines are liquid-tight to the liquid contents not leaking before the spout application.

[0044] In this invention, a method of spout application can be modified in addition to the above-mentioned example appropriately.

Advantage

[0045] A folded portion is formed outward in accordance with paper packaging container of this invention, thus the paper packaging container of shed roof shape having small stress and no crack can be obtain.

[0046] In accordance with paper packaging container of this invention, because the area of the top is widened, a comparatively large-scale spout, an opening device, a spout of a wide mouth can be attach.

[0047] In addition, in comparison with a brick shape container, a higher spout can be attached.

[0048] In accordance with paper packaging container

[0049] In a product showcase of a retail store, a container having customer attractive force can be provided with consumers.

[0050] The four corners of a container top are easy to catch a physical outside effect in a distribution process. However, because two corners of a back side are protected by means of slant folded flaps and, the container damage can be reduced.

[0051] In addition, because two corners of the front side move to the lower portion of a top, the corners are hard to receive the outside effect. Because of the wider obtuse-angle of the corners, the stress to the container material drops.

[0052] A container can be formed as high speed with folding along crease lines in existing packaging filling machine producing a container, without using a special preliminary top crease formation apparatus.

Industrial Applicability

[0053] Paper packaging container of this invention is used in order to pack liquid food of milk, juice, refined sake, shochu, mineral water and other drink.

Claims

1. A method of manufacturing paper packaging container comprising forming a web-shaped packaging material having crease lines as tube with longitudinal seal, filling contents in said tube-formed packaging material, forming said tube packaging material as a pillow -shaped preliminary shape container with transversal seal in a traverse direction, cutting an individual preliminary shape container, forming a final shape container having a top, side walls and a bottom by means of folding according to said crease lines, **characterized by** that

   in said top forming step, a body part of said preliminary shape container is pushed to inflate a part for said top and then said preliminary shape container is folded according to said crease lines and,

   in an axis of slanted top ridgelines, flaps formed by said top forming are folded on said side wall faces to form said top as shed roof shape.

2. A paper packaging container obtained from tube forming by longitudinal seal of web-shaped packaging material, filling of contents into said tube-formed packaging material, transversal sealing of said tube packaging material in a traverse direction, forming of a pillow-shaped preliminary shape container, individual cutting of said preliminary pillow-shaped shape container and, forming of a final shape container having a top, side walls and a bottom by folding according to said crease lines, **characterized**

   said flaps by said top forming are folded on side wall faces and,

   said top is formed as shed roof shape.

3. A paper packaging container according to Claim 2, wherein said paper packaging container has a spout on said top of said shed roof shape.

Fig. 1

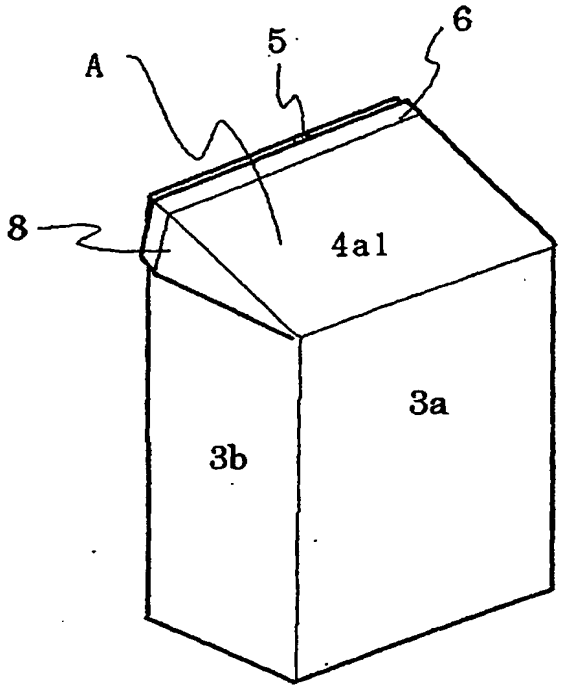


Fig. 2

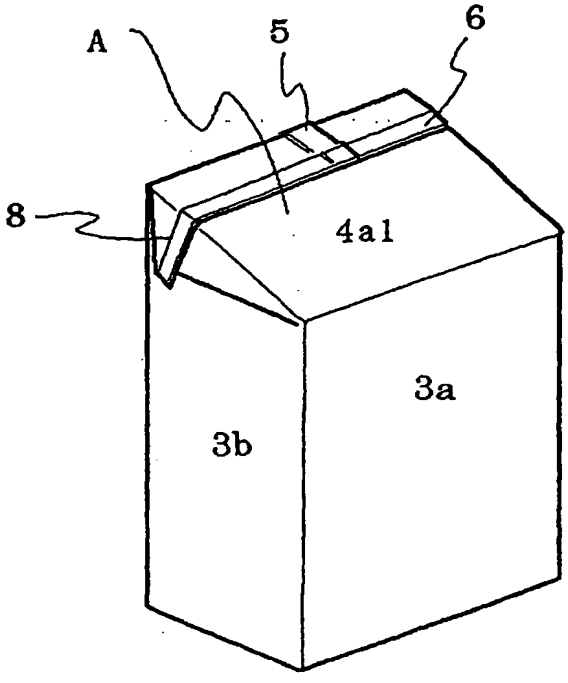


Fig. 3

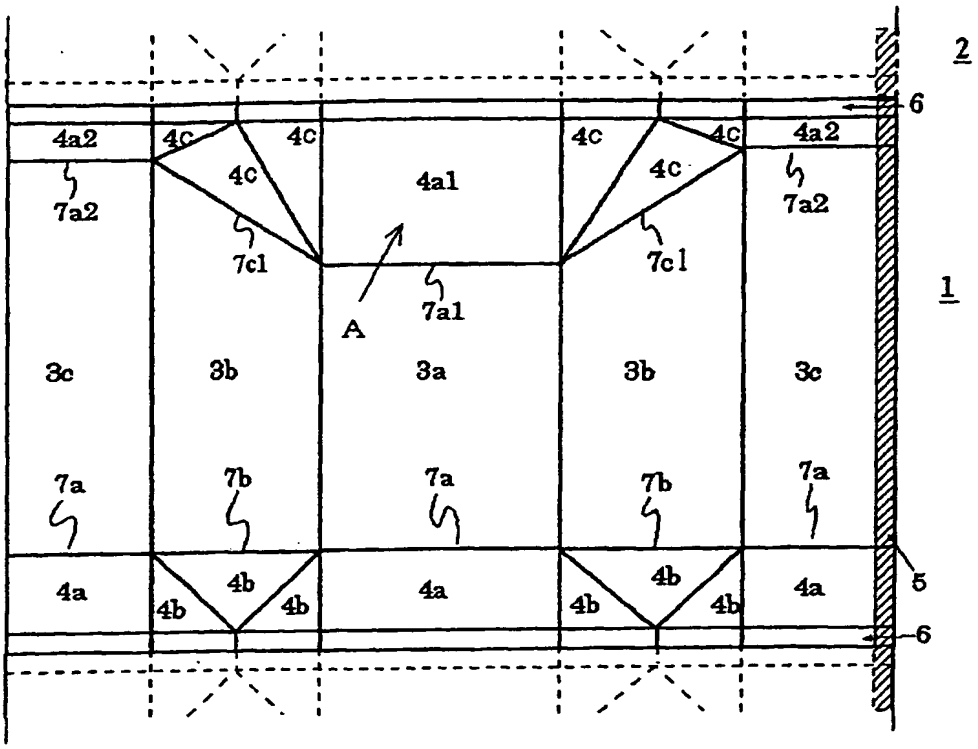

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Fig. 4

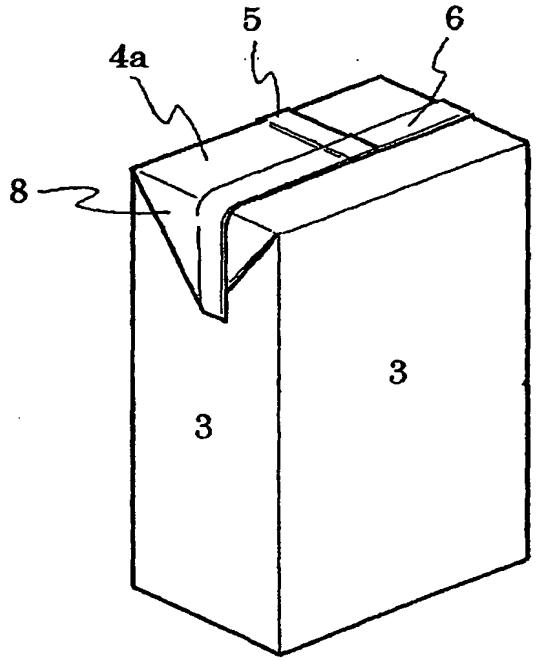
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Fig. 5

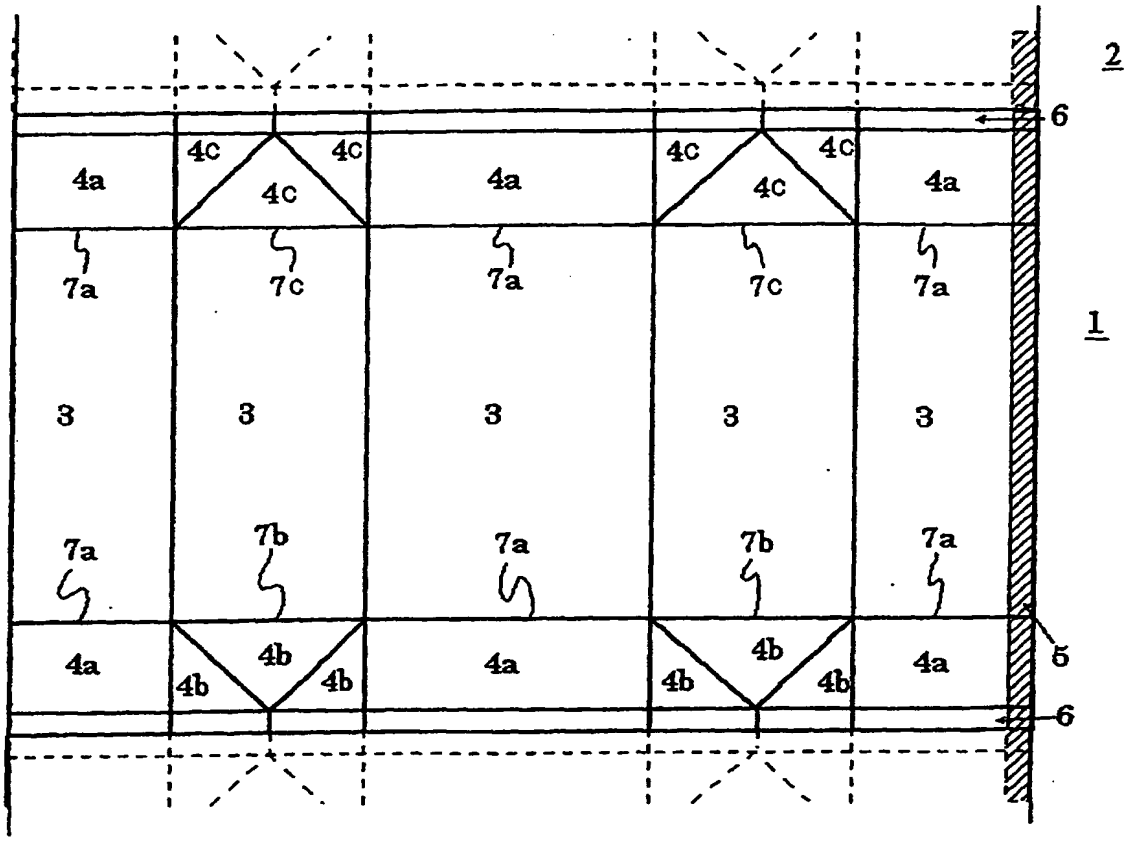
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Fig. 6

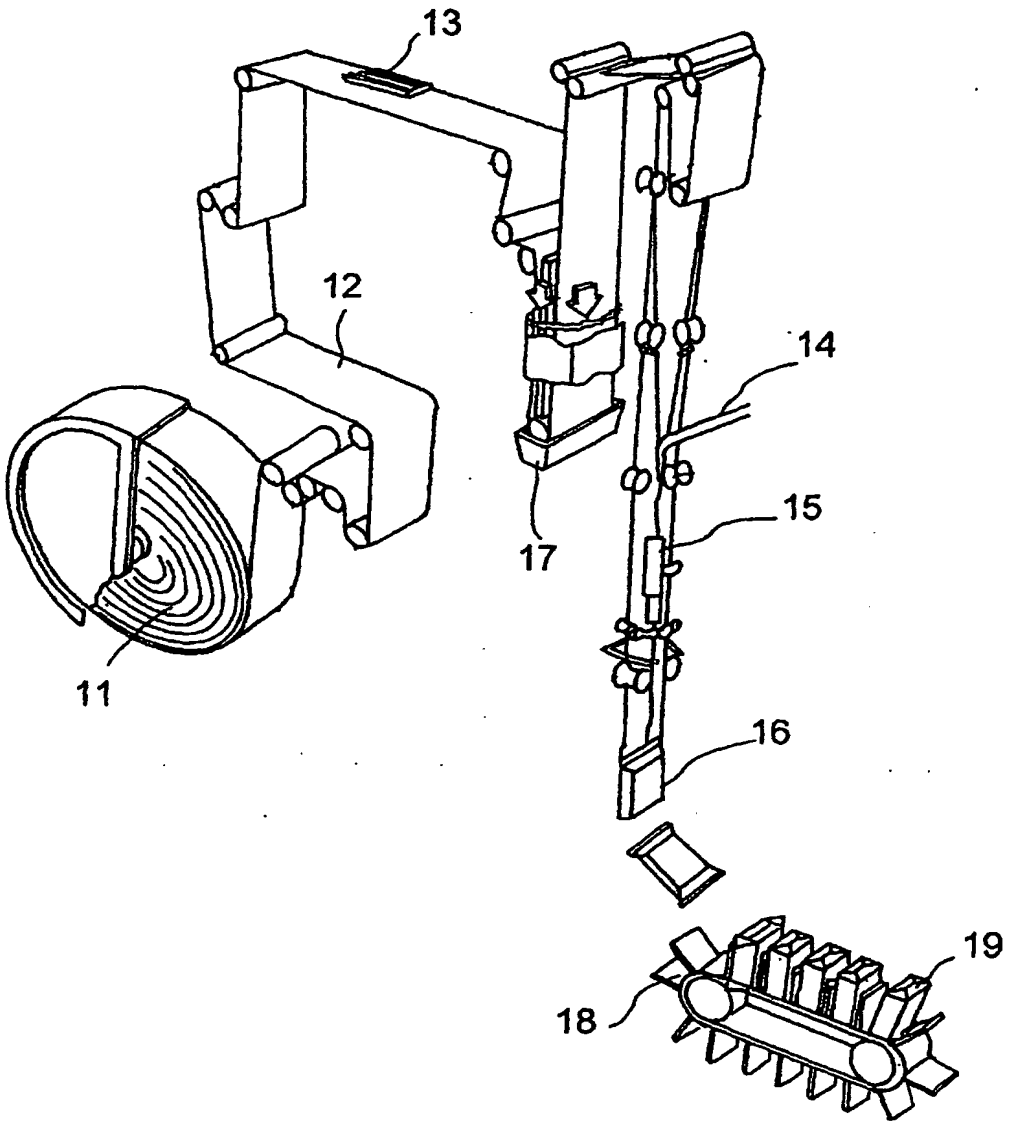

Fig. 7

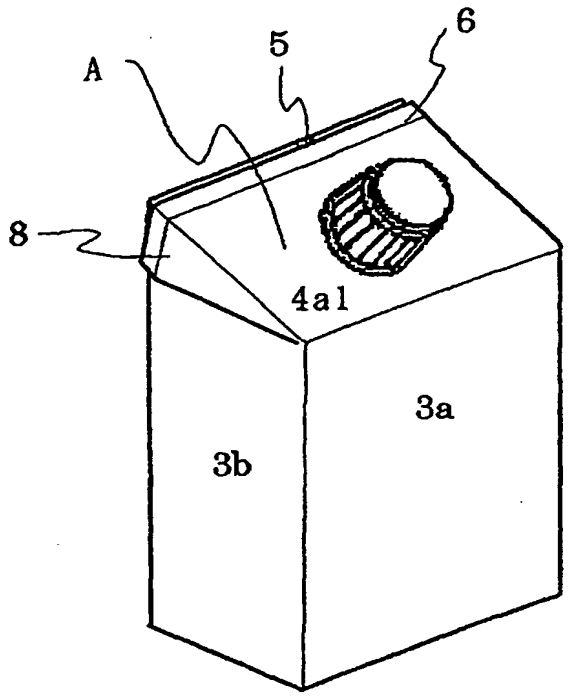

Fig. 8

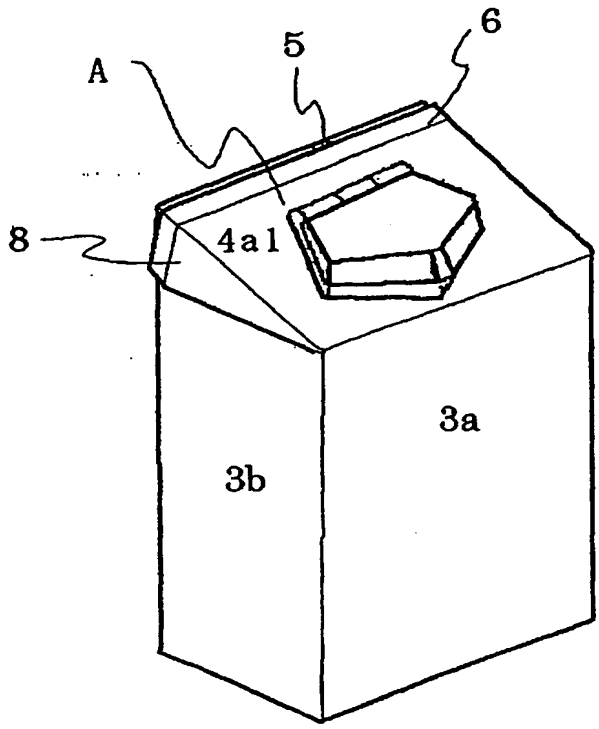

Fig. 9

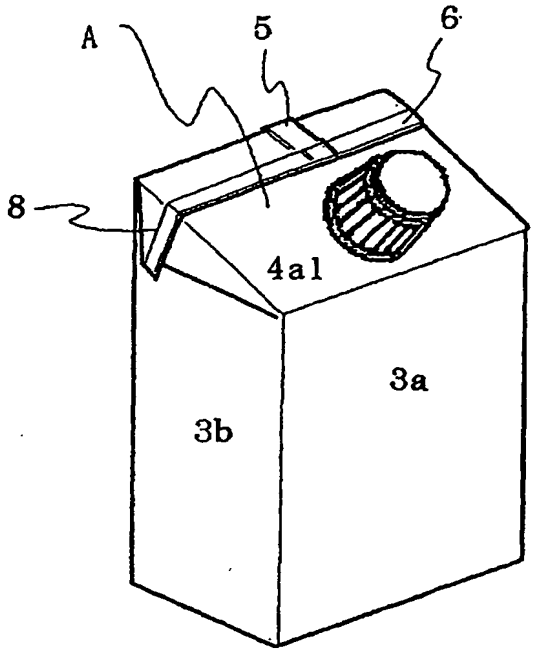
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Fig. 10

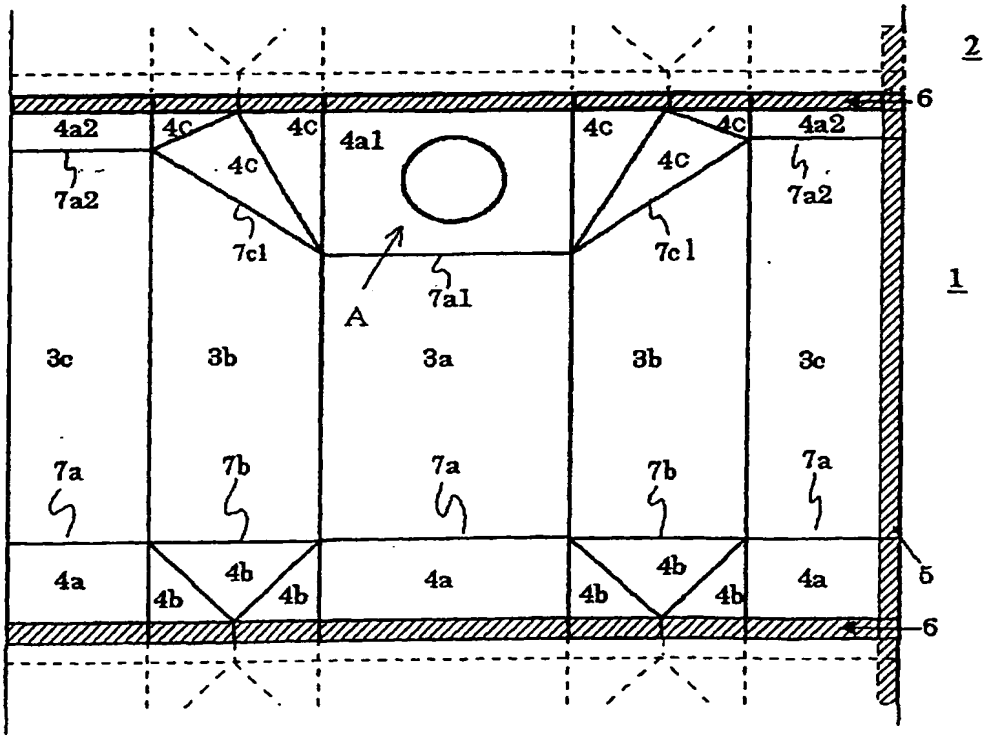
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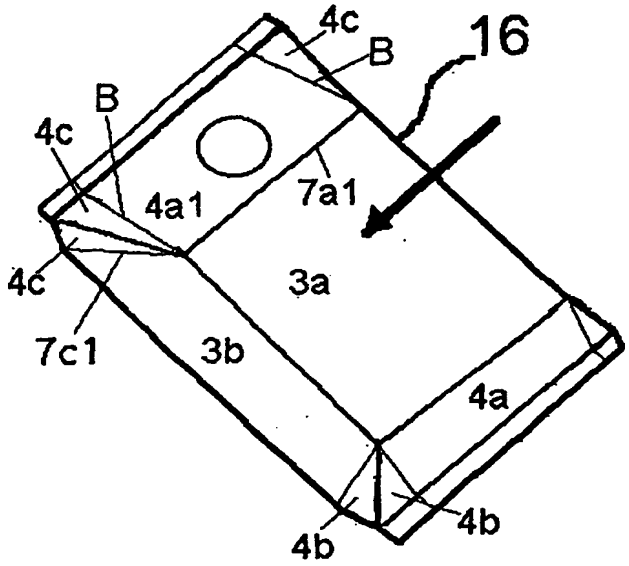
Fig. 11



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP01/06519

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl[7] B65B61/24, B65B9/10, B65D5/40, B65D5/74

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl[7] B65B61/24, B65B9/10-9/24, B65D5/40, B65D5/74

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1926-1996 Jitsuyo Shinan Toroku Koho 1996-2001
Kokai Jitsuyo Shinan Koho 1971-2001 Toroku Jitsuyo Shinan Koho 1994-2001

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 58-193206 A (Tetra Pak International AB), 10 November, 1983 (10.11.83), Fig.1 & EP 91712 A1 & US 4580392 A & SE 8202302 A	1-3
Y	JP 11-310230 A (Dainippon Printing Co., Ltd.), 09 November, 1999 (09.11.99), Fig. 1 (Family: none)	1-3

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
27 September, 2001 (27.09.01)	09 October, 2001 (09.10.01)
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Form PCT/ISA/210 (second sheet) (July 1992)